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Planting

BLACK WALNUT

for Timber

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PLANTING BLACK WALNUT FOR TIMBER

By

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Through the years, many far-sighted people have planted black walnut. Though many plantings have failed for lack of care, enough good ones remain to show that success is possible if a few basic principles are followed (fig. 1).

Planting a tree is not enough; it

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must also be tended carefully. Markets for crooked, limby, short-boled walnut are poor. It only pays to grow good trees.

Walnut can be safely planted where it grows naturally in commercial quantities (fig. 2). It is risky to grow walnut outside this general area unless old trees have demonstrated the suitability of the local climate.



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Figure 1.—This black walnut plantation is ready for harvest.

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Cover: High-quality black walnut planting stock has a caliper at least $\frac{1}{4}$ -inch measured 1-inch above the root collar, a live terminal bud, and a well developed root system.

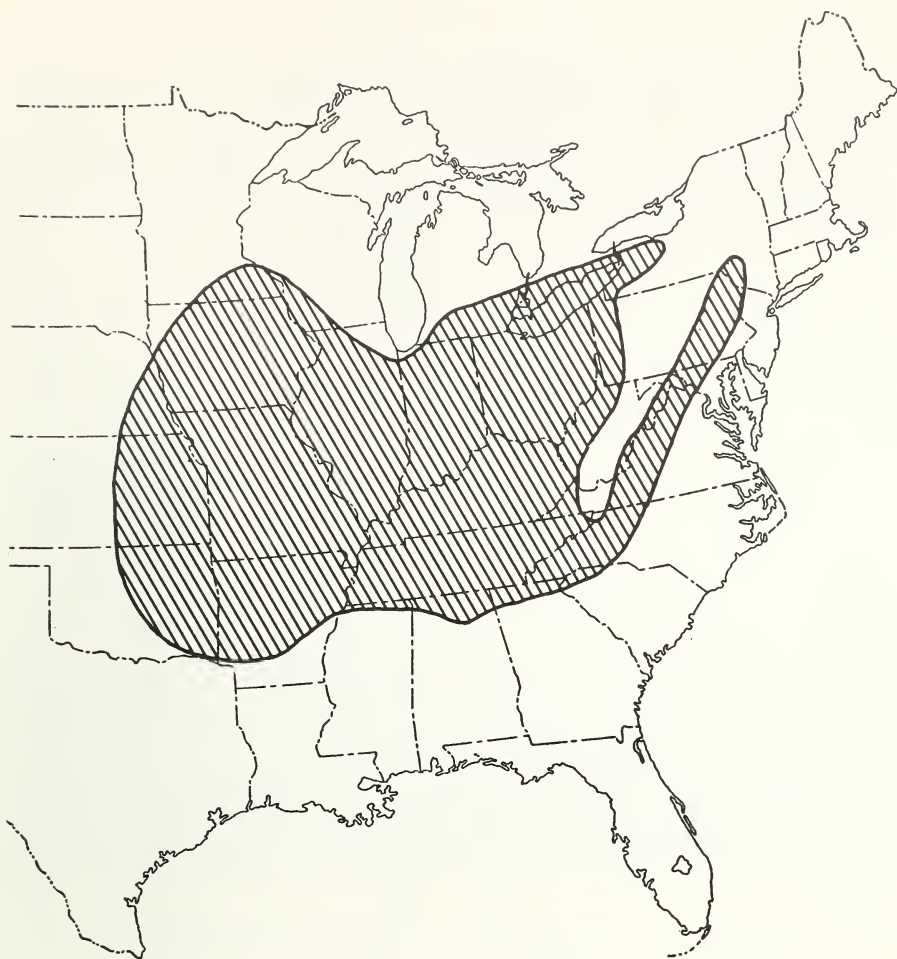


Figure 2.—Generalized commercial range of black walnut.

Select the Right Site for Planting

Planting black walnut on the wrong site has been a common mistake. Walnut trees may survive on poor sites such as dry narrow ridgetops, steep south-facing slopes, and eroded fields, but growth will be slow and quality poor. Fastest growth typically occurs on stream terraces, in coves, and on lower north- and east-facing slopes.

The soil of the planting site should be deep, fertile, and well drained. Look for soil that is porous and with a uniform dark brown or

yellowish-brown color to at least a 24-inch depth. Sandy loam, loam, or silt loam textured soils are most desirable, but good walnut also occurs on silty clay loam soils. Soils with these textures hold a large amount of water that is available to the tree in dry periods during the growing season. Avoid gravelly stream bottoms, clayey-textured soils, hardpan land, and mottled or grayish-colored soils on poorly drained flats.

Forest openings are good places to plant walnut. These should be at

least 100 feet wide, but larger ones are better. Valleys, coves, north and east slopes, and well-drained uplands are good sites, if the soil is suitable. The trees growing on the area show the kind of site. Red oak, white ash, basswood, yellow-poplar, sugar maple, beech, slippery elm, and, of course, black walnut itself are good indicators that the site will grow walnut.

Land that has been cropped may grow good walnut unless the soil has been compacted, eroded, or depleted of fertility. Many walnut plantings on wornout cropland have not produced one good tree per acre. Land suitable for corn is probably fertile enough, but soil also must be deep and have good internal and surface

drainage. Many farms have areas of productive cropland too small to fit into the overall farm operation. Such areas may be ideal for growing walnut.

Do not start a large plantation simply because it is easy to plant trees when other farmwork is slack. Trees need weeding like any other crop, and this must be done when the row crops are weeded and work schedules are crowded. A small successful plantation is better than a large failure. Do not plant walnut in fence rows or near buildings. Veneer and lumber buyers are wary of such trees because they may contain imbedded metal that will damage expensive machinery.

Prepare the Planting Area

Most planting sites will need some preparation before planting. The big problems are weeds, grass, and woody plants that will reduce seedling survival or seriously decrease growth. All field and forest sites will need some weed control during the first few years after planting. Weeds may be controlled mechanically or chemically. Plowing and disking work well on many areas. If there is no erosion problem, such preparation can be done in the fall before spring planting. Weeds can be controlled for an entire growing season by one application of such herbicides as simazine or atrazine before weed seeds germinate. A good mixture to use is 2 pounds of active simazine plus 2 pounds of active atrazine per acre on silt loam and heavier soils. The rate should not exceed 4 pounds of active ingredients per acre. If the area is direct seeded, use only simazine and plant the seed at least 2 inches deep. Repeated cultivation during the growing season will give good control but chemical treatment is cheaper.

Chemicals are available for killing most unwanted vegetation without

going to the expense of plowing and disking. The kind of chemical and the time of application depend upon the weed species involved. For example, broadleaf weeds and woody plants can be controlled the summer before spring planting with herbicides. Follow the directions and cautions on the registered label and consult a service or extension forester, or weed control specialist for uses under varied soil and climatic conditions.

Careless herbicide preparation can be wasteful through spillage. Much care should be taken to avoid splashing spray liquids on the skin or in the eyes. Do not inhale fumes or spray dust. Often there is no reason to broadcast spray the entire planting area. It is much cheaper and just as effective to treat only strips or spots. Strips and spots should be at least 4 feet wide.

Both tractor-powered equipment and garden-type sprayers can be used to apply chemicals depending upon the size of the job (fig. 3). With a small number of trees, it may be practical to hand cultivate or scalp sod from the planting spots. Any



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Figure 3.—A backpack or garden type sprayer can be used to apply preemergent herbicides in a 4-foot circle around newly planted seedlings.

method that keeps the weeds under control during the establishment period will give good results as long as you do not injure tree roots or foliage or create an erosion problem.

When planting forest openings, it is not necessary to remove the forest litter. But if the area has a dense weed or grass cover, it should be eliminated at each planting spot.

You can remove patches of dense underbrush from forest openings by cutting it and spraying the stumps or the foliage with herbicides. Foliage spraying must be done the summer before trees are planted. A hand

sprayer can be used on brush up to 10 feet tall; a backpack, power mist blower is effective up to 20 feet. Use foliage sprays only on calm, clear days and do not use them near crops that are sensitive to the spray.

When making openings, be sure to fell or girdle any trees that may shade planted walnuts. Stumps of sapling- and pole-sized trees should be treated with brush killer to prevent sprouting. Be sure to follow the instructions on the label. When in doubt about herbicides, consult your State forester, a weed specialist, or the manufacturers.

Plant Seedlings or Seed

SEEDLINGS

Seedlings purchased from State or private nurseries for forest planting are graded 1-year-old trees. Make sure that the walnut seed or seedlings you order come from an area with similar climatic conditions. Walnut geneticists recommend that the seed source be within 150 miles north or south of the planting site. For good survival and growth, seedlings should have tops at least 10 to 14 inches long, and stem diameter 1 inch above the root collar should be at least one-fourth inch. If possible, use even larger stock as long as the roots are correspondingly large and fibrous. Do not plant seedlings with broken or short taproots, or those with root rot.

Walnut seedlings have large roots, so be sure the planting hole is wide and deep enough to avoid doubling or twisting the roots. Holes can be made with a planting bar, grub hoe, mattock, tile spade, or shovel, but an easy way is with a tractor-mounted post-hole auger. Set the trees so that the root crown is slightly below the surface of the ground. It is better to plant deep than shallow.

During planting, seedlings may be carried in a planting box or a bucket. Nurseries pack material, such as sphagnum moss, around the roots for shipping. Save some of this packing, saturate it with water, and use it to cover the tree roots in the container during the planting job. Always keep seedlings moist and cool. Never plant a seedling that has dried out.

Trees should be planted as soon as possible after they arrive from the nursery. Seedlings come bundled in durable water-holding material so that they can be stored in a cool shady place for several days without deterioration. The bundles may be kept in cold storage for several weeks at a temperature between 35° and 40° F.

Seedlings can also be kept temporarily by transplanting them in a

"heeling-in" trench for several weeks if the soil stays moist and the trees are dormant. The trench should be deep enough so that the roots can be covered with soil and long enough so that seedlings can be spread out to avoid air pockets. Pack soil firmly around the roots, and water the trees as needed.

Spring is the best time to plant seedlings regardless of location. Spring planting should be done late enough to avoid frost heaving. Where frost heaving is not a problem, trees may be planted in the fall and winter.

SEED

Planting seed is easier and cheaper than planting seedlings, but it has some serious disadvantages. Seed must be collected and stored; planted seed must be protected from pilfering rodents; and germination may be poor. But these are not insurmountable problems.

It is best to collect the walnuts yourself from local trees. In this way, you know that the new trees will be suited to local weather extremes. Be sure to select seed from the best trees available. Look for trees with straight, clear stems that are without bumps, rot, and frost cracks. Do not collect seed from crooked, short-bodied, limby, and forked trees. Take a tip from the squirrels: Do not collect nuts that have lain on top of the ground during the winter. Crack a few nuts before collecting to be sure they are good.

The one way to store quantities of walnuts during winter is to husk, and place them in a stratification pit. Stratification is nature's way of maturing the seed embryo so that it will germinate in the spring when the soil warms. The pit should be well-drained but moist. It may be located on a slope or in deep porous soil but never in a poorly drained area. The pit should be about 2 feet deep with the walnuts placed in layers two nuts thick separated by layers of sand. Do

not let the nuts dry out before, during, or after stratification. Nuts that are stored dry through the winter will not germinate. Cover the pit with at least 1 foot of soil to prevent excessive freezing or drying. Small quantities of hulled seed can be "stratified" in plastic bags in a refrigerator.

Be sure to plant seeds before they begin to sprout because sprouted seeds are fragile. Seeding should be complete by the end of March in the South and by the end of April in the North.

Seed can be planted with a dibble, stick, or metal rod. Make a hole 2 or 3 inches deep, drop in a nut, scrape soil into the hole, and press firmly with your foot to eliminate air pockets. Generally you may expect about half the nuts to germinate. Some planters put 2 or 3 seeds in a small circle to be sure to get a good stand. Others prefer to plant seed close together in rows. In either case, surplus trees must be removed after the first growing season. Planting several seeds in one spot is better for machine cultivation.

Planted nuts must be protected in some mechanical way because there is no known chemical that will repel the animals that disturb

them. Wire protectors can be used to cover the seed and they can be reused year after year on new plantings. Such protectors can be easily made by shaping a semicircular piece of hardware cloth into an open-topped cone fastened together with wire or hog rings. The cones must be held in place with a wire rod or partially buried beneath the surface of the ground. Wire protectors should be removed when the seedlings are about 6 inches tall or before the first leaves are well formed.

Another protective device can be made from No. 2 tin cans. First place the cans in the fire to remove the tin coating so that they will rust and disintegrate in a few years. Cut out one end of a can and make an X-cut in the other end. Carefully pry up the four points of the "X" to make a 1-inch opening (fig. 3). Holding the can open end up, put an inch or two of soil in the can, drop in a nut, and fill with soil. Then quickly turn the can over so that the open end is down and place it in a hole about an inch deeper than the can is high. Fill in the hole, covering the can with about an inch of soil.

Provide Adequate Growing Space

Forest openings on good soil become a dense tangle of volunteer trees, brush, weeds, briars, and vines within 2 or 3 years. Cut enough volunteer trees to prevent their crowding out the walnut, but leave some as "trainers" so that the planted trees will produce clear, straight boles. Marking the planting spots is advisable to help in finding the seedlings when they are small.

Spacing on forest sites can be irregular to take advantage of natural openings in the underbrush. And there is little need to plant trees closer than 10 feet apart. Also, plant walnuts at least 20 feet from the edges of openings to avoid

shade and competition from adjacent trees.

On open land, plantings can be pure walnut or walnut mixed with other species. Walnut has thin foliage, and when grown in pure stands the boles are usually limby; mixed plantings improve wood quality by encouraging natural pruning. Also, the other species help to form a dense canopy that prevents the development of sod. Sod generally forms under pure stands of walnut and retards tree growth. Alternate rows of red oak, white ash, or another species that grows about as fast as walnut may be planted. Walnut planted in mixture with fast-growing

species, such as cottonwood, black locust, sycamore, sweetgum, or yellow-poplar will soon be overtopped. Walnut-conifer mixtures are generally not satisfactory. Walnut is known to produce a root exudate that is toxic to some plants including various species of conifers.

Properly tended, pure plantings produce the most walnut per acre in the shortest time. Pure plantings require more frequent pruning and weeding than mixed plantings, but

they contain more walnut trees from which to choose the final crop trees.

If farm equipment is used for weed control, trees in both mixed and pure stands should be spaced at least 10 feet apart to permit cross cultivation. With chemical and hand weeding, spacing within rows can be reduced to 7 or 8 feet. Wider spacing means fewer trees to plant and weed; closer spacing means a wider selection of crop trees and better natural pruning.

Tend Your Trees

Planting is merely the first step (fig. 4). A farmer does not plant a row crop in the spring and come back in the fall for a bumper harvest. He tends his crop, and so must the tree farmer. On good walnut sites, you should plan to control weeds for at least 2 years or until the trees have outgrown the weeds. To decrease losses from frost heaving, do not cultivate late in the growing season during the first year. Various chemicals can be used effectively for controlling weeds around seedlings. Your local forester or county agent can help you select the right chemical. Removing all weeds in the plantation works well if you cultivate by tractor. With hand cultivation or with spot or strip control, keep down all weeds within 2 feet of each tree.

Beginning with the first growing season, forked trees should be pruned to develop single-stemmed trees with-

out serious crooks. When the trees are about 5 years old, you can start pruning to remove the lower branches. Remove the branches flush with the bole any time during the dormant season. Do not remove more than a third of the live crown at one time, and do not permit the branches to get bigger than 1 inch in diameter before pruning. Sprouts should be removed from the pruned bole before they develop into branches and cause knots in the wood. Keep at least 17 feet of the bole free of branches and sprouts. You will get more money for your trees if you prune higher.

Walnut has few natural enemies, but you should visit the plantation often to check for insect and disease attacks. And, of course, fire and livestock must be kept out of your plantation.

Get Expert Help

Not all the problems you will have are covered here, but plenty of technical advice is available. Usually you should seek help in deciding whether you have a good site for walnut. Soil Conservation Service specialists and foresters can help here.

State foresters, State agricultural experiment stations, State extension foresters and county agents, farm

foresters, local USDA Forest Service offices, and forestry consultants can give you specific information either through publications or on-the-ground inspection. The Forest Service is conducting new research on all phases of walnut culture. New techniques are released as fast as they are developed through the various forestry and extension outlets mentioned above. The American



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Figure 4.—6-year-old planted black walnut in Hardin County, Ill. A good site, wide spacing, weed control, and pruning have produced an excellent tree.

Walnut Manufacturers' Association, 666 Lake Shore Drive, Chicago, Ill. 60611, is willing to offer suggestions. More details on site selection, how to plant, how to handle stock and plantation care can be found in Agriculture Handbook No. 247, "Forest Planting Practice in the Central States."

CAUTION: Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions

and heed all precautions on the labels.

Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways

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that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts: wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of

herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

Note: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Department of Agriculture, consult your county agricultural agent or State Extension specialist to be sure the intended use is still registered.



Use Pesticides Safely

FOLLOW THE LABEL

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